

Ode to E Pluribus Unum for Sunday May 8 2022



Rubin's Galaxy



Image Credit: NASA, ESA, B. Holwerda (University of Louisville)

In this Hubble Space Telescope image the bright, spiky stars lie in the foreground toward the heroic northern constellation Perseus and well within our own Milky Way galaxy.

In sharp focus beyond is UGC 2885, a giant spiral galaxy about 232 million light-years distant. Some 800,000 light-years across compared to the Milky Way's diameter of 100,000 light-years or so, it has around 1 trillion stars. That's about 10 times as many stars as the Milky Way.

Part of an investigation to understand how galaxies can grow to such enormous sizes, UGC 2885 was also part of An Interesting Voyage and astronomer Vera Rubin's pioneering study of the rotation of spiral galaxies. Her work was the first to convincingly demonstrate the dominating presence of dark matter in our universe.

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Bad Day on the 25th Floor



It got crowded in heaven, so it was decided only to accept people who'd had a really bad day on the day they died. On the first morning when the policy was employed, St. Peter was standing at the pearly gates and said to the first man in line, "Tell me about the day you died."

The man said, "Oh, it was awful. I was sure my wife was having an affair, so I came home early from work one day to catch her in the act. I searched all over the apartment, and couldn't find him anywhere. So finally I went out on the balcony (we live on the 25th floor) and found this man hanging over the edge by his fingertips. So I went inside, got a hammer, and started hitting his hands. He fell of course, but he

landed in some bushes and lived. So I went inside, got the refrigerator, and pushed it out over the balcony and it crushed him. The strain of the act though, gave me a heart attack, and so I died.

St Peter couldn't deny that this was a pretty bad day and that it was a crime of passion, so he let the man enter heaven. He then asked the next man in line about the day he died.

"Well, sir, it was awful. I was doing aerobics on the balcony of my 26th floor apartment when I slipped over the edge. I managed to grab the balcony of the apartment beneath me, but then some maniac came out and started pounding on my fingers! I fell of course, but landed in some bushes and lived !! But then this guy came out and dropped a refrigerator on me !!

St. Peter chuckles a bit, lets him in to heaven, and decides that he could really start to enjoy this job. "Tell me about the day you died," he said to the third man. "Okay, picture this... I'm naked, hiding inside of a refrigerator...."

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Comments made in the year 1955! The March of Time



I never thought I'd see the day all our kitchen appliances would be electric. They're even making electric typewriters now.

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It's too bad things are so tough nowadays. I see where a few married women are having to work to make ends meet.

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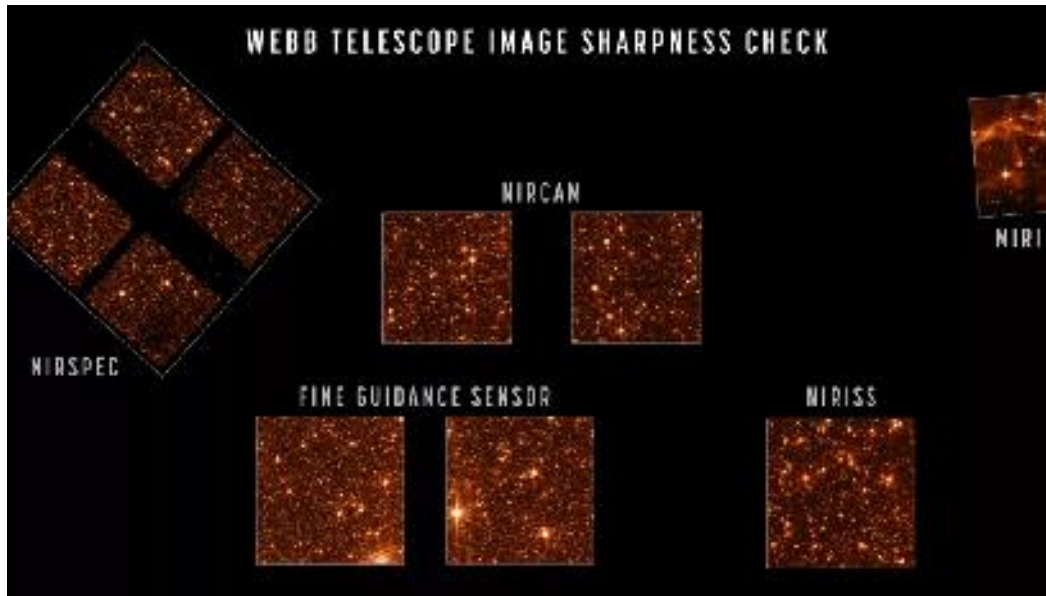
It won't be long before young couples are going to have to hire someone to watch their kids so they can both work.

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James Webb Space Telescope completes alignment Milestone

By Elizabeth Howell

The Webb team can now proceed with science instrument commissioning.



NASA's James Webb Space Telescope can now capture sharp images of celestial objects with multiple instruments, the agency announced April 28, 2022. (Image credit: NASA/STScI)

NASA's view of deep space just got sharper.

The James Webb Space Telescope finished its alignment phase after demonstrating it can capture "crisp, well-focused images" with all four of its science instruments, the agency announced Wednesday (April 28).

The milestone, which NASA showcased with some new Webb images, allows the mission team to proceed with science instrument commissioning. The telescope will thus enter a new phase of preparation after several months of mirror and instrument alignments. This next step will take roughly two months, with Webb remaining on track to finish in June if everything goes to plan.

"These images have profoundly changed the way I see the universe," Scott Acton, Webb wavefront sensing and controls scientist at Ball Aerospace, said in the NASA statement. "We are surrounded by a symphony of creation; there are galaxies everywhere. It is my hope that everyone in the world can see them."

It's been a busy time for the \$10 billion telescope since its launch on Dec. 25, 2021. First, Webb had to rocket to deep space, a process that took almost a month, and then it had a complex, seven-step alignment process to get through. Each milestone has gone pretty much to plan, with only minor tweaks required along the way.

A week ago, Webb officials reported that the 18 hexagonal segments of the scope's primary mirror were almost completely cooled to the deep-space temperatures they require to see objects sharply in infrared light. Now the mirrors appear to be ready, as they are sending "fully focused light" into every instrument, which in turn is rendering images.

"The optical performance of the telescope continues to be better than the engineering team's most optimistic predictions," NASA officials said in the statement, noting that the image quality is only "diffraction limited." (That means the only obstacle to seeing fine detail is the size of the telescope, rather than a problem with its performance.) From here on, the agency added, mirror alignments will need only minor adjustments.

The next phase of work will include science instrument commissioning, along with telescope calibration. Instrument commissioning requires lenses, masks, filters and other equipment to work properly in different configurations, to make sure they can perform science work.

<https://youtu.be/UAx-D0GCvnI>

As for calibration activities, there's a list of milestones that Webb will need to hit before it is declared operational.

"The telescope will be commanded to point to different areas in the sky, where the total amount of solar radiation hitting the observatory will vary to confirm thermal stability when changing targets," NASA officials said of the calibration.

"Furthermore, ongoing maintenance observations every two days will monitor the mirror alignment and, when needed, apply corrections to keep the mirrors in their aligned locations," they added.

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Lennie Tristano



Lullaby of the Leaves <https://youtu.be/xTOLKbq8Ko8>

Turkish Mambo <https://youtu.be/G6dQHdBfkmq>

Tangerine <https://youtu.be/J9XzEb3O2jk>

Tangerine as played by Dave Brubeck Quartet <https://youtu.be/WzbE2uViW1o>

Leonard Joseph Tristano (1919 – 1978) was an American jazz pianist, composer, arranger, and teacher of jazz improvisation.

Tristano studied for bachelor's and master's degrees in music in Chicago before moving to New York City in 1946. He played with leading bebop musicians and formed his own small bands, which soon displayed some of his early interests – contrapuntal interaction of instruments, harmonic flexibility, and rhythmic complexity.

His quintet in 1949 recorded the first free group improvisations. Tristano's innovations continued in 1951, with the first overdubbed, improvised jazz recordings, and two years later, when he recorded an atonal improvised solo piano piece that was based on the development of motifs rather than on harmonies.

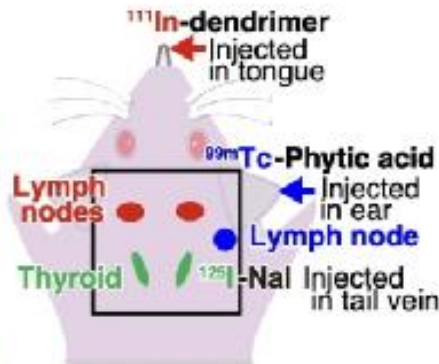
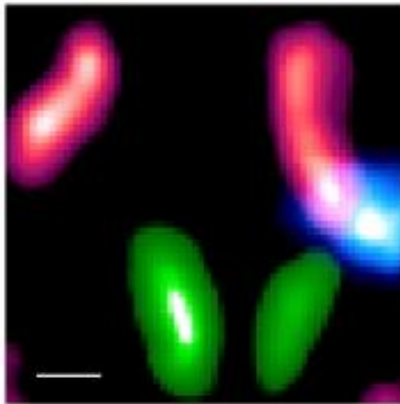
Tristano was cool enough to have been a West Coaster only he wasn't. My favorite of his works was Turkish Mambo in which he was playing with time signatures long before his contemporaries.

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Researchers Exploit Astronomy Technology for Biomedical Imaging

By Tami Freeman

In vivo imaging



In vivo imaging: A reconstructed image clearly separates three radionuclides: ^{111}In in lymph nodes below the jaw (red), ^{125}I in the thyroid (green) and $^{99\text{m}}\text{Tc}$ in lymph node below the ear (blue). Scale bar: 1 mm. The diagram shows where the radionuclides accumulate in the mouse. (Credit: Yagishita et al./Kavli IPMU)

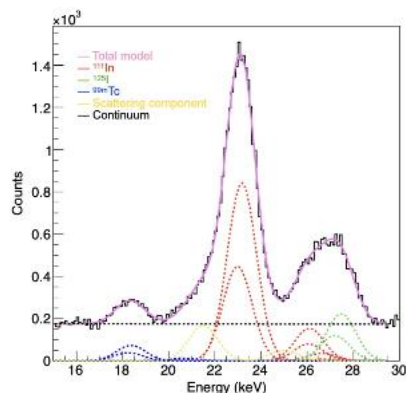
In vivo imaging plays an essential role within medicine, pharmaceuticals and biology. Imaging with fluorescent tracers is one promising approach, as multiple tracer types are available to simultaneously visualize the distribution of numerous molecules. Biological tissues, however, will scatter and attenuate visible light, making image reconstruction and quantitative measurements of fluorescent dyes difficult.

Instead, researchers can employ X-ray-emitting radionuclides for in vivo imaging, using techniques such as single photon emission computed tomography (SPECT) and positron emission tomography (PET) to image tracers deep inside the body. Multi-radionuclide imaging, however, is tricky. There are far fewer radionuclides available for imaging compared with the number of fluorescence dyes, and the energy ranges of some of their emission lines can be similar, or even overlap.

What's needed is a high-sensitivity detector, with high spatial resolution and good enough energy resolution to resolve potential overlaps between multiple radiotracers. To achieve this, biomedical researchers in Japan have teamed up with their colleagues in astronomy to adapt technology used in space observations for biomedical research.

Led by Atsushi Yagishita, from Kavli IPMU and the National Cancer Center Japan, the researchers developed the IPMU imager – a biomedical imaging system based on a cadmium telluride detector originally developed for hard X-ray and gamma-ray space observations. The imager exhibited high spatial and energy resolution, but could not completely eliminate all noise, especially when imaging radionuclides with similar emission lines. So the researchers improved it further by employing a spectral analysis method used in X-ray astronomy.

Spectroscopic analysis



Spectroscopic analysis: The data obtained by the IPMU imager (solid black line) and spectra from individual radionuclides (coloured dotted lines) identified and separated using the fitting method.

(Credit: Yagishita et al./Kavli IPMU)

When imaging multiple radionuclides, the goal is to generate spectra and images from individual radionuclides, without contamination from other emitters in the sample. The spectroscopic analysis method involves fitting the observed spectra to a model of radionuclide emission lines in specific energy bands. Then, using the determined intensity ratios between the nuclides, any contamination in the image can be calculated and eliminated. The researchers, also from RIKEN and the Institute of Space and Astronautical Science/JAXA, describe the new imaging technique in Nature Biomedical Engineering.

System tests

To verify their new approach, the researchers measured solutions of the gamma-ray emitters iodine-125 (^{125}I) and indium-111 (^{111}In). They examined a pure ^{125}I sample, and a sample with the same activity of ^{125}I mixed with ^{111}In . Their analysis method completely separated spectra from the individual radionuclides and the background component. After processing, ^{125}I images from both samples exhibited the same signal intensity, demonstrating the ability to remove noise from other radiation sources and obtain accurate images of only the target radionuclide.

“We assessed the quantitative performance of the images when using multiple radionuclides and confirmed that the intensity of the images correctly represented the radioactivity,” Yagishita tells *Physics World*.

The researchers also evaluated the spatial resolution of the IPMU imager, by imaging a phantom containing various sized holes filled with solutions of ^{111}In , ^{125}I or technetium-99m ($^{99\text{m}}\text{Tc}$) and reconstructing images in the 21–25, 26–29 and 135–143 keV energy bands, respectively. For all samples, the images clearly showed the 350 and 500 μm holes, while some of the 250 μm holes were also distinguished. The team note that this spatial resolution of roughly 300 μm is similar to that of state-of-the-art small-animal SPECT systems.

In vivo experiments

Finally, Yagishita and colleagues used the IPMU imager to simultaneously visualize thyroid tissue, mandibular lymph nodes and parotid lymph nodes in mice, using ^{125}I , ^{111}In and $^{99\text{m}}\text{Tc}$, respectively. The spectrum obtained with the IPMU imager clearly showed the separate emission lines from the three radionuclides.

The team then reconstructed images of the three tracers in the relevant energy bands. While the raw images contained noise and ghosting caused by emission from the other radionuclides, the fitting technique identified unwanted radiation sources and produced separate images of each radionuclide in vivo.

In images of ^{125}I (in the 26–29 keV energy band), the thyroid gland where iodine accumulates could be accurately delineated by subtracting background noise and ^{111}In contamination. The researchers note that the processed image showed no activity in the lymph nodes, where ^{125}I does not accumulate.

For comparison, they imaged the same mouse using a conventional small-animal SPECT/CT scanner. The low-energy-resolution spectrum only showed a single peak, while SPECT images in the ^{125}I energy window showed the lymph nodes more clearly than the thyroid. These results suggest that the IPMU image is of higher quality than the SPECT image.

In future studies, the team hopes to use the IPMU imager to visualize targeted radionuclide therapy (TRNT) drugs in vivo. “TRNT drugs target specific landmarks on cancer cells and accumulate in cancer cells,” Yagishita explains. “Although the drug pharmacokinetics is ordinarily invisible, it is theoretically possible to visualize TRNT drugs because some emit gamma rays or X-rays. So currently, we are focusing on visualizing the pharmacokinetics of TRNT drugs.”

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WANT TO FEEL OLD?

Bonanza premiered 62 yrs ago.
The Beatles split 52 yrs ago.
Laugh-In premiered nearly 54 yrs ago.
The Wizard of Oz is 82 yrs old.
Elvis is dead 44 yrs. He'd be 84 today.
The Thriller video is 38 yrs old.
Jimi Hendrix and Janis Joplin dead 51 yrs.
John Lennon dead 41 yrs.
Mickey Mantle retired 53 yrs ago.
Back To The Future is 37 yrs old.
Saturday Night Fever is 44 yrs old.
The Ed Sullivan Show ended 49 yrs ago.
The Brady Bunch premiered 52 years ago.
The triplets on My Three Sons are 52.
Tabatha from Bewitched is 57.
The Corvette turned 68 this year'
The Mustang is 57.

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Blue whale



World's ever largest creature last spotted off the B.C. coast in July 2019. Their numbers are increasing now after a 1966 halt on hunting them

The blue whale, at upwards of 30 meters (100 feet) in length and weighing as much as 173 Tonnes, is the largest creature on Earth.

It is also the largest animal to have ever existed on the planet, including the dinosaurs.

It is also one of the loudest things in the world, with its calls being recorded at as high as 188 decibels, louder than a jet plane taking off.

<https://youtu.be/CChQ6pDUXmk>
https://www.youtube.com/watch?v=qGK6a6_tQEI

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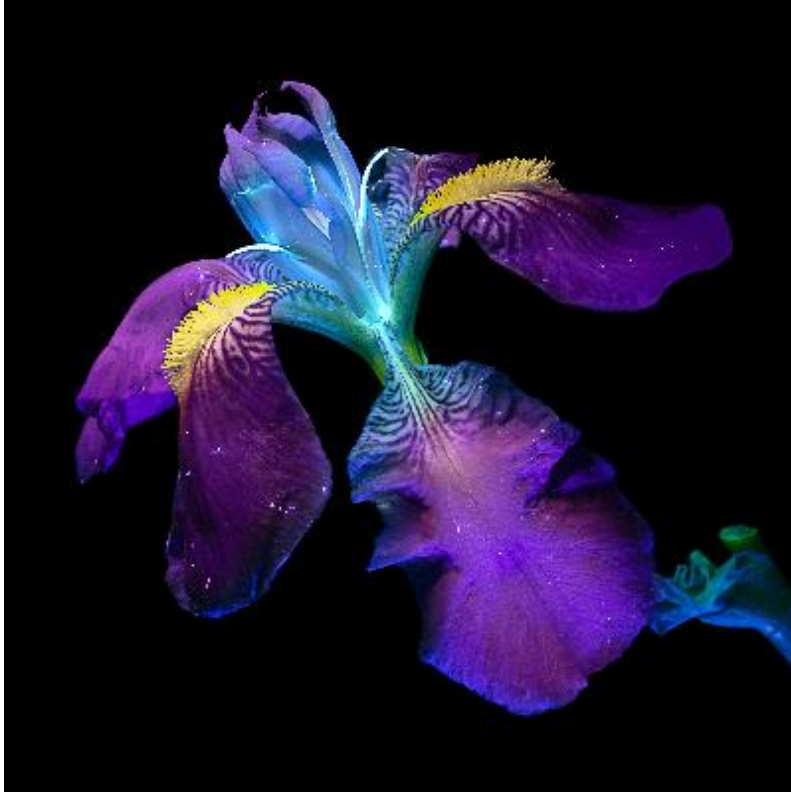
Omigosh



<https://youtu.be/pJexxAp9Nv0>

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In Ultraviolet Light, Flowers Glow with Radiant, Saturated Color



https://www.thisiscolossal.com/2022/04/debora-lombardi-uv-flower-photos/?utm_campaign=PBS12week%20Newsletter&utm_medium=email&_hsmi=211444806&_hsenc=p2ANqtz-_SYyWhPZYPmdg5l0ahojPeUlm6jKqAl4rIVRurR9qZaWmZt6yNaeixmvxXjSTpPU4gUrjGmMQBwWquLusNGV1ldQ4gDQ&utm_content=211444806&utm_source=hs_email

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The Nightingale's Song

An Interview with Sam Lee



"In the legacy of poetry and prose and folk song ... the nightingale has appeared always in this place of wisdom keeper, of unlocker. They unlock you and they rinse through you, because that's the power."

On a summer evening in 1923, Beatrice Harrison was in her garden in Surrey practicing her cello, when a melodic voice echoed the notes back to her. To her astonishment, it was a nightingale. Over the next twelve years, Beatrice played duets with nightingales in a series of famed recordings.

Nearly a century later, as the nightingales are once more singing spring into England's forests, folk musician Sam Lee is there singing with them. As part of a new documentary series that will be released next year, the Emergence team is heading to the UK to experience Sam in musical kinship with the nightingales. We spoke with Sam last year about the transformative experience of creating songs in collaboration with this migratory songbird, and this week we're revisiting this special conversation: one filled with song, the stories of ancestors that are passed through folk music, and the space for communion that is opened with silence.

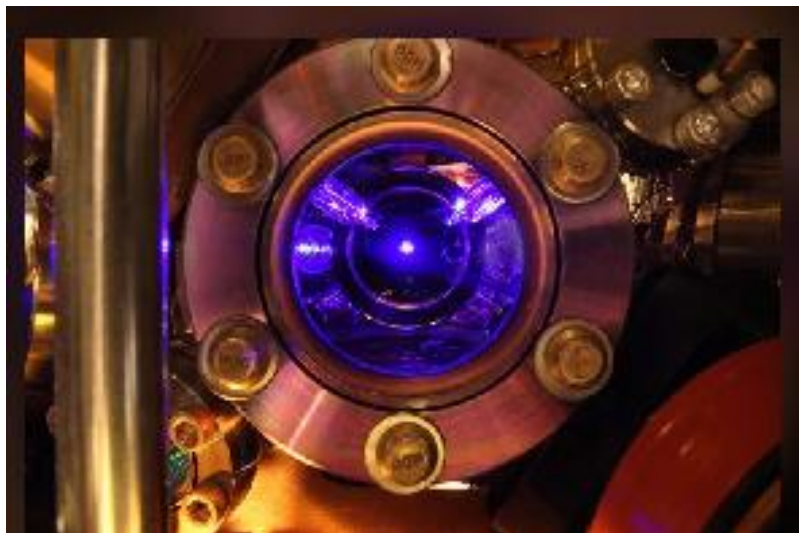
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Ultraprecise Atomic Optical Clocks May Redefine the Length of a Second

By Tia Ghose

The length of a second hasn't been updated in 70 years. That may change soon.



*A strontium lattice optical atomic clock. Ultraprecise atomic optical clocks may redefine the most fundamental unit of time in the next decade
(Image credit: The Ye group and Brad Baxley, JILA)*

The definition of a second, the most fundamental unit of time in our current measurement system, hasn't been updated in more than 70 years (give or take some billionths of a second).

But in the next decade or so, that could change: Ultraprecise atomic optical clocks that rely on visible light are on track to set the new definition of a second.

These newer versions of the atomic clock are, in theory at least, much more precise than the gold-standard cesium clock, which measures a second based on the oscillation of cesium atoms when exposed to microwaves.

"You can think of it as equivalent to having a ruler with tick marks every millimeter, as opposed to a stick that measures just 1 meter," Jeffrey Sherman, a researcher with the National Institute of Standards and Technology's Time and Frequency Division in Boulder, Colorado, told Live Science.

In June, the International Bureau of Weights and Measures may release the criteria needed for any future definition of the second, The New York Times reported. So far, no single optical clock is quite ready for prime time.

But a new definition could be formally approved as soon as 2030, Sherman said. The new type of optical clock could help unmask dark matter, the invisible substance that exerts gravitational pull; or find remnants of the Big Bang called gravitational waves, the ripples in space-time predicted by Einstein's theory of relativity.

Fundamental unit of measure

The current standard second is based on a 1957 experiment with an isotope, or variant, of cesium. When pulsed with a specific wavelength of microwave energy, the cesium atoms are at their most "excited" and release the largest possible number of photons, or units of light.

That wavelength, dubbed the natural resonance frequency of cesium, causes the cesium atoms to "tick" 9,192,631,770 times every second. That initial definition of a second was tied to the length of a day in 1957 — and that, in turn, was linked to variable things, such as the rotation of Earth and the position of other celestial objects at that time, according to The New York Times.

In contrast, optical atomic clocks measure the oscillation of atoms that "tick" much faster than cesium atoms when pulsed with light in the visible range of the electromagnetic spectrum. Because they can tick much faster, they can, in theory, define a second with much finer resolution.

There are multiple contenders to supplant cesium as the reigning timekeeper, including strontium, ytterbium and aluminum. Each has its pluses and minuses, Sherman said.

To achieve such clocks, researchers must suspend and then chill atoms to within a hair's breadth of absolute zero, then pulse them with the precisely tuned color of visible light needed to maximally excite the atoms. One part of the system shines the light on the atoms, and the other counts up the oscillations.

But some of the biggest challenges come from making sure the laser is emitting the exact right color of light — say, a certain shade of blue or red — needed to kick the atoms into their resonant frequency, Sherman said. The second step — to count the oscillations — requires a so-called femtosecond laser frequency comb, which sends pulses of light spaced at tiny intervals, Sherman said.

Both elements are incredibly complicated feats of engineering and can take up an entire lab room on their own, Sherman said.

Uses of optical clocks

So why do scientists want ever-more-precise atomic clocks to measure the second? It's not just an academic exercise.

Time does not simply march to its own drum; Einstein's theory of relativity says it is warped by mass and gravity. As a result, time may tick infinitesimally more slowly at sea level, where Earth's gravitational field is stronger, than at the top of Mount Everest, where it is ever-so-slightly weaker.

Detecting these minute changes in the flow of time could also reveal evidence of new physics. For instance, dark matter's influence has so far been detected only in the distant dance of galaxies circling one another, from the bending of light around planets and stars, and from the leftover light from the Big Bang.

But if clumps of dark matter lurk closer to home, then ultraprecise clocks that detect the tiny slowing of time could find them.

Similarly, as gravitational waves rock the fabric of space-time, they squish and stretch time. Some of the biggest gravitational waves are detected by the Laser Interferometer Gravitational-Wave Observatory, a several-thousand-mile relay race for light that measures blips in space-time created by cataclysmic events such as black hole collisions. But a battalion of atomic clocks in space could detect these time dilation effects for much slower gravitational waves, such as those from the cosmic microwave background.

"They're so-called primordial gravitational waves that might be leftover remnants from the Big Bang," Sherman said.

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Maurice Ravel Le Tombeau de Couperin



Simon Rattle Berlin Philharmonic <https://youtu.be/pdeAnQKUTvY?t=1>

Luca Buratto, Piano <https://youtu.be/sbVcJedT1V0?t=1>

'Tombeau' is a musical term from the Baroque era meaning 'a piece written as a memorial.' Every movement of Le Tombeau de Couperin is dedicated to the memory of a friend of Ravel's, who had died fighting in WWI.

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747 BBJ with 42 Hours Sent to the Desert



By Russ Niles

If you want to fly it you have to act fast. Otherwise you can buy it piece by piece.

A virtually new Boeing 747-8 abandoned by the Saudi royal family 10 years ago is now owned by Boeing and awaiting an unknown fate in Arizona. According to the FAA registry Boeing became the owner of the aircraft, which has 42 hours on it, the day before it was flown from Basel, Switzerland, to Pinal Air Park, a desert storage site near Tucson. Once they arrive there, aircraft seldom leave intact, but Boeing hasn't announced any plans for the plane. Speculation is that it will be parted out, which is the fate of most aircraft at Pinal. But the Saudis long ago abandoned the aircraft, simply because no one in the royal family wanted it.

The plane was ordered by Saudi crown prince Sultan bin Abdulaziz Al Saud for about \$275 million and was being fitted with its executive interior in Basel when he died in 2011. The aircraft was never finished and none of his relatives showed any interest in it. At one point it was up for sale for \$95 million but there were no takers. It sat on the ramp in Basel for 10 years before taking what might have been its final flight on April 15. The aircraft currently has a temporary certificate of registration that expires May 14.

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Billy Squier



Born on May 12, 1950 in Wellesley Hills, MA, Squier is an actor and composer, known for *St. Elmo's Fire* (1985), *Battleship* (2012) and *The Taking of Pelham 1 2 3* (2009). He has been married to Nicole Schoen since 2002.

In 2013 punk rock band The Squids spoof Billy Squier's 1986 music video "Rock Me Tonight" in their music video of "Get Off My Cloud."

The Squids music video for "Get Off My Cloud" which parodies Billy Squier's "Rock Me Tonight" music video reached #1 in the music video category on the Emmy winning comedy website "Funny Or Die", and is the highest rated music video ever on the website which was founded by Will Ferrell and Adam McKay in 2007.

He collaborated with members of Queen on the song "Emotions in Motion," and was a close friend with members of the band, including Freddie Mercury, to whom he wrote and performed a song about after his death.

His music is used in two movies starring Sean Penn: *Fast Times at Ridgemont High* (1982) and *Bad Boys* (1983).

Andy Warhol designed the cover for his album *Emotions in Motion*: showing Billy's face with various colors, liken to Warhol's famous Marilyn Monroe painting.

During the 1980's, his music was a combination of 1970's glam rock bands like Queen and T-Rex (he somewhat resembled Marc Bolan from T-Rex) and hard rock, in particular Led Zeppelin.

The Stroke https://youtu.be/C_OGARBe6W0
In The Dark https://youtu.be/Ikw_dSB12QQ

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Words of Wisdom

"The only mystery in life is why the kamikaze pilots wore helmets." – Al McGuire

"The difference between stupidity and genius is that genius has its limits." – Albert Einstein

"War is God's way of teaching Americans geography." – Ambrose Bierce

"At every party there are two kinds of people – those who want to go home and those who don't. The trouble is, they are usually married to each other." – Ann Landers

"My opinions may have changed, but not the fact that I'm right." – Ashleigh Brilliant

"The surest sign that intelligent life exists elsewhere in the universe is that it has never tried to contact us." – Bill Watterson

"As a child my family's menu consisted of two choices: take it or leave it." – Buddy Hackett

"My favorite machine at the gym is the vending machine." – Caroline Rhea

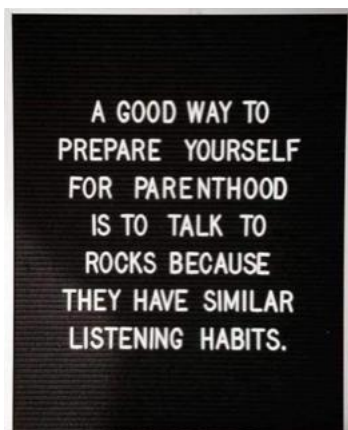
"All right everyone, line up alphabetically according to your height." – Casey Stengel

"Never under any circumstances take a sleeping pill and a laxative on the same night."
– Dave Barry

"How many people here have telekinetic powers? Raise my hand." – Emo Philips

"If you live to be one hundred, you've got it made. Very few people die past that age."
– George Burns

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What 5 Megabytes of Computer Data Looked Like in 1966



62,500 punched cards, taking four days to load.

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The Strange Business of Hole-in-One Insurance

When golf tournaments promise big cash prizes for holes-in-one, they turn to niche insurers to protect against a stroke of luck.



Zachary Crockett

On a warm day in September 2009, Jason Hargett, a 35-year-old restaurant manager and father of 4, stepped up to the tee at Red Ledges golf resort in Heber City, Utah.

It was the end of a charity tournament and a big prize was on the line: Anyone who sunk a hole-in-one would win \$1m.

Hargett took a swing.

The ball careened 150 yards through the air, plopped onto the green, and slowly rolled back into the hole. Cheers erupted from the small crowd as Hargett sprinted down the fairway in disbelief.

But one entity wasn't celebrating: the insurance firm that had been hired by the organizers.

If you've ever watched a golf tournament or charity event, you've probably seen some kind of prize (a cash payout, a flashy car, a vacation package) for acing a specified hole.

The chances of this happening for an amateur golfer are minuscule (~1 in 12.5k). But most organizers can't risk getting stuck with the bill.

Instead, they turn to hole-in-one insurance firms that assume the risk for a small fee.

A brief history of 'unlucky' golfers

The hole-in-one insurance business dates back nearly 100 years — but it was originally intended for a different purpose.

In many golf circles, it was (and still is) customary for the lucky golfer to buy drinks for everyone in the clubhouse after landing a hole-in-one. This often resulted in prohibitively expensive bar tabs.

And an industry sprouted up to protect these golfers.

Tiger Woods serves drinks during the Johnnie Walker Classic in 2000 (David Cannon/ALLSPORT)

A newspaper archive analysis by The Hustle revealed that hole-in-one insurance firms sprouted up as early as 1933.

Under this model, golfers could pay a fee — say, \$1.50 (about \$35 today) — to cover a \$25 (~\$550) bar tab. And as one paper noted in 1937: "The way some of the boys have been bagging the dodos, it might not be a bad idea."

Though the concept largely faded away in the US, it became a big business in Japan, where golfers who landed a hole-in-one were expected to throw parties "comparable to a small wedding," including live music, food, drinks, and commemorative tree plantings.

By the 1990s, the hole-in-one insurance industry had a total market value of \$220m. An estimated 30% of all Japanese golfers shelled out \$50-\$70/year to insure themselves against up to \$3.5k in expenses.

Around the same time, golf tournaments began offering increasingly large prizes for holes-in-one as a way to drum up press.

And hole-in-one insurance began to make a comeback in the US — not for individual golfers, but for the event organizers putting up the money.

How hole-in-one insurance works

Mark Gilmartin runs Hole In One International, one of the oldest hole-in-one insurance companies in the US.

The idea first struck in 1991, when Gilmartin, then 29 and the proprietor of a golf club repair company, saw a burgeoning need for prize coverage at charity events.

Since 1991, his Reno-based firm has paid out ~\$56m in insurance claims — including Jason Hargett’s \$1m prize.

Today’s hole-in-one-insurance landscape, Gilmartin says, is ripe with competition: More than 2 dozen companies specialize in the niche field, vying for Google search keywords and golf tournament dollars.

The process generally works like so:

1. A golf tournament decides to give away a prize — say, a \$60k Mercedes — to anyone who gets a hole-in-one at the event.
2. They partner with a sponsor (in this example, a dealership) that offers the prize.
3. The sponsor pays Hole In One International a relatively small fee (\$200 to \$1k+); if someone gets a hole-in-one, Gilmartin covers the cost of the prize.

Gilmartin says the cost to insure against a hole-in-one is dependent on 3 factors:

- The number of golfers in the tournament
- The length (yardage) of the contest hole
- The cash value of the hole-in-one prize

Once a client provides this information, Gilmartin plugs it into an algorithm that computes the odds, factors in his risk and margins, and spits out a dollar amount per golfer.

A standard tournament with 100 golfers playing a 165-yard hole with a \$10k prize sets an event back ~\$235.



Zachary Crockett / The Hustle

Insurance firms operate on the premise that the odds of something happening are small enough to assume a repeated risk — and in Gilmartin’s case, this holds true.

The chances of someone getting a hole-in-one are fairly small:

- 1 in 12.5k for amateur golfers
- 1 in 3k for pro golfers

But ~450m rounds of golf are played every year. And because of the scale and popularity of the sport, the feat happens on a daily basis.

The National Hole-In-One Registry — the preeminent record-keeper of aces — estimates that 128k holes-in-one are achieved internationally every year by professionals and amateurs.

In other words, Gilmartin is no stranger to opening up his pockets.

What happens when someone wins?

Every year, Gilmartin says he insures ~15k events and pays out “hundreds and hundreds” of holes-in-one.

Most of those prizes are under \$100k in value. But sometimes, he gets dinged up pretty bad.

In November 2021, for instance, 3 LPGA golfers got a hole-in-one in the same week, each winning a 2-year lease on a Lamborghini Huracán. The tournament’s sponsor, Morgan Auto Group, purchased hole-in-one insurance from Gilmartin, and the winning shots set him back ~\$300k.

“Yeah, those women are pretty damn good,” he says. “That one still stings.”

Over the past 30 years, Gilmartin has also had to pay out at least 4 \$1m prizes, which are typically awarded in annuities. Hargett, who landed that shot in Utah, got \$25k/year for 40 years — a steep cost for Gilmartin, who charged a total of ~\$1.1k to insure the 6 contestants at that event.



Pro golfer Austin Ernst with her Lamborghini Huracán after sinking a hole-in-one at the

LPGA's Pelican Women's Championship in November 2021
(Austin Ernst / Instagram)

Before paying out a prize, Gilmartin requires a few proof-points:

A sworn affidavit from an unbiased, non-participatory witness at the event.

A "gentle investigation" of the hole-in-one's legitimacy (verifying the tee position wasn't changed, that the yardage was consistent with the contract, etc.).

Fraud does happen in the business.

In 1998, for instance, a man got a hole-in-one at an event and won a choice between a 1931 Cadillac or \$40k in cash. But it turned out that the event organizer owed the winner a favor and had staged the whole thing. The organizer was convicted of fraud, and the prize was nullified.

But Gilmartin says prizes are rarely denied — and despite forking over \$2-\$4m in claims in any given year, he always ends up in the black.

"You're going to get hit in this business, but hopefully it all comes out in the wash at the end of the year," he says.

Cow poop, frisbee tosses, and half-court shots

Hole-in-one insurance is only one facet of a broader industry called prize indemnity insurance — the coverage of any promotional event in which a large prize is offered.

Gilmartin runs a second company, Odds On Promotions, that covers much weirder stuff than holes-in-one.

"If you can dream it, I'll insure it," he says.

Among the many events Gilmartin has insured prizes for:

- Half-court shots during halftime at basketball games
- Guessing the number of jelly beans in a jar
- Guessing the exact weight of a giant pumpkin
- Throwing a frisbee through the sunroof of a car
- Making a 7-10 split in bowling
- Rubber duck races
- Tossing a cookie into a bowl of milk
- Guessing the Dow Jones average on a set day in the future
- Tossing an olive into a martini glass from across a bar

Among the weirder things he's insured? Cow patty bingo (https://www.youtube.com/watch?v=G3_9yf5cDMI).

"It's big in the Midwest," says Gilmartin. "You divide a big field into, say, 100 squares, give each one a number, then let a cow loose. If the cow poops on a preselected number, the person wins a prize."

Chances of winning various contests

For amateur contestants, approximate



Contest	Chances
Hole-in-one (golf)	12,500 to 1
Predicting the exact Dow close on a set future date	10,000 to 1
7-10 split (bowling)	200 to 1
Basketball shootout (layup, 3-pointer, half-court)	100 to 1
Tossing a frisbee through the window of a car	50 to 1
Tossing a cookie into a bowl of milk	50 to 1
Tossing an olive into a martini from across the bar	50 to 1
50-foot putt	40 to 1
Half-court shot	40 to 1

DATA: Source: Hole In One International / GRAPHIC: Zachary Crockett



Zachary Crockett / The Hustle

All of these things are insurable, he says, because they fall into one of 3 categories of risk:

1. Mathematical (like flipping a coin)
2. Skill-based (a half-court shot)
3. Odds-based (a sports team winning a game)

In most cases, Gilmartin can calculate the rough chances of something happening and use the data to compute his premiums.

But sometimes, he has to insure things for which data doesn't exist. And in those cases, he re-creates the scenario himself.

If a sponsor wants contestants to throw a ping-pong ball through a hole in a watermelon, he'll go outside with his employees and re-create it himself, recording the results.

"It keeps things exciting," he says. "By insurance standards, at least."

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My Walking Thoughts



May 8th 2022

The Assault on the Special Forces Camp at Ashau

[a three-part series removed from my almost finished Phantoms from Vietnam]

Part 1 was pretty much a soliloquy on North Vietnamese Colonel Minh's 1966 vision of the war in which he details the stupidity of the American leadership and his country's future when in the end the Americans just pack up and leave.

Into the Valley of Death

The Bugsmasher stumbled from one air column to the next as it skirted the eastern slope of the Assam Range en route to the grass strip at Dong Mai at the north end of the Bhat Shan Valley. Off to the right, at the edge of the broad coastal plain, sat the provincial capitol of Hue and its citadel. Farther east, the South China Sea sparkled as shafts of morning sunlight accented its deep blue hues that emerged from a stunning swath of emerald close to shore. It was barely nine in the morning, yet already, ominous banks of cumulonimbus were hatching from the mountains like time-lapse mushrooms.

Colonel Minh, hardly noticed the spectacle. His mind was on the Special Forces compound at the southern end of the Bhat Shan Valley, a scant fifteen miles from his own base camp.

Already, gun emplacements were under construction in the surrounding hills in preparation for next month's planned attack. The base, sitting astride Route 9A from Laos, constituted a nettlesome bottleneck to the flow of supplies into the coastal areas of northern South Vietnam so as far back as September plans were in place for its elimination. Now, in February, the time for action was near at hand, with training in full swing at the base camp at Ho An Ca.

Looking down the Ashau Special Forces camp, Minh could see that more construction had taken place along the north wall with the addition of inner and outer trench lines and a general clearing of fire lanes toward the northwest. From an altitude of 6,500 feet he could see activity on the ground and even as he watched, a pair of helicopters lifted off, wheeling away to the southeast. Minh made a mental note to spend more time flying with Air America. What he had seen in the brief overflight would save many casualties when the siege began and the perspective from the air added a new dimension to his ground reconnaissance efforts.

The base, he knew, was manned by a platoon of US Special Forces advisors, two companies of Nung, and several hundred CIDG Civilian Irregular Defense Group (CIDG) mercenaries originally recruited by the Americans for their technical skills, but more recently converted by the Special Forces into a military organization.

Of the bunch, the Nung were militarily the most significant. They were Vietnamese of Chinese origin, proud and aloof with equal disdain for everyone in the neighborhood. They disliked the Vietnamese with almost as much venom as they did the Chinese, tolerating the Americans only to the extent that payday occurred routinely every fortnight.

As warriors, the CIDG troops were a joke. In the beginning, the idea was for them to apply their agricultural skills to increasing the self-sufficiency of the rural villages that dotted the countryside. It seemed like a good idea at the time, carrying with it long-range benefits for the villagers themselves who became more productive in the wake of the program. Interestingly, it was Hanoi that reaped the benefits, not Saigon, relieving a major logistics problem for the North Vietnamese Army. This increased productivity gave the NVA a reliable food supply in South Vietnam, allowing them to turn more of their supply capacity over to weapons and munitions. The villagers complained, but it didn't matter. Armed soldiers in each village saw to it that the peasants toed the mark, tendering to Saigon what was Saigon's and passing along the rest to the NVA. The villagers were no better off than they were before the CIDG program arrived.

Now that their original program had been all but terminated, the CIDG became a thorn in the side of the Special Forces who tried vainly to turn them into soldiers. Many had already defected, and Minh had little doubt that when the shooting started, many more would run, perhaps even to the point of precipitating a stampede that would leave the base all but defenseless. This was not guesswork on his part. The CIDG was full of fifth-columnists and Minh had gone to great length to infiltrate several hand-picked regulars into the Ashau contingent both to provide a reliable flow of firsthand information on activities at the base and to be ready to spark insurrection when the attack began.

As the base fell from view behind him, Minh leaned back in the seat, satisfied that the preparations for the assault were adequate. Relaxed, eyes closed visualizing the conduct of the attack, he was totally unprepared for the violent crash and yaw that sent him flying headfirst into the seat frame in front of him and then in a whipping motion out into the aisle where he dashed his head on the spar box separating the cabin from the cockpit area.

To Minh in his dazed state, what followed was a nightmare of careening and slewing and air rush and yelling as the aircraft staggered under its wounds. It was a rod cap in the right engine that failed, allowing its piston to crash into the crankcase where it jammed solid, breaking the engine's articulating rod. The engine went off like a grenade, wrenching itself nearly off its mounts as it spewed molten chunks of metal in all directions. Bobbie, who as pilot-in-command sat in the left seat, reacted to the emergency by disconnecting the supplies of fuel, oil, and hydraulics entering the engine through the emergency firewall cutoff control valve, but the propeller, now free from restraint of engine oil pressure, spun up to some impossible rpm and separated explosively from the crankshaft. Like some avenging demon, the two-bladed scythe entered the cabin just behind the co-pilot's head, cleaving its way through like a buzz-saw until it exited by the window adjacent to the seat in which Minh had been sitting.

As his senses returned, Minh could see that the plane was in a steep left bank with thick black smoke pouring off the up-tilted wing. Below, the hills and jungle whirled by in a kaleidoscope of colors. Bobby and Carl worked frantically to bring the aircraft under control. In the midst of the chaos, Minh watched in horrified amazement as Watanabe, the photographer from the Tokyo's Asahi Shim bun, braced himself between two seats and began mechanically clicking off shots as if this were some sort of sporting event. As

he came to the end of the roll, he rewound the film into its canister, opened the camera, threaded new film onto the crank, checked all of the settings, and went back to work. Paralyzed by fear, Minh was furious.

"If y'all would kindly take your seats, now," Bobby shouted, leaning far back into the cabin to make himself heard above the slipstream, "we're going to land this little old critter."

Bucking and wallowing, yawed far to the right to keep the smoke and flames away from the cabin, Bobby pushed the Bugsmasher into a swift steep descent to the valley floor. Beside him in the right seat, Carl cycled the landing gear switch to the down position. When nothing happened, he shrugged and began the laborious task of lowering the wheels with the emergency hand crank. After a dozen turns, it jammed solid and he threw up his hands in despair. The ground rushed up and at the last moment, Bobby closed the left throttle while Carl secured all the switches.

The plane touched down gently on its tail and after a short ride, rocked forward onto its belly. It was all very smooth with only the grinding noise to attest to the plane's perilous condition. Inexorably, the plane began to slew to the left, drifting to that side of the runway and its adjacent drainage ditch. Its momentum spent, the aircraft left the runway at a walk and nosed easily into the ditch, coming finally to rest with its tail sticking sixty degrees into the air. Already there were people running toward the smoking wreckage. While Carl popped the overhead hatch in the cockpit, Bobby turned his attention to the passengers.

"Ashau, gentlemen, now if you'll kindly unstrap one at a time and move forward to the cockpit we'll begin deplaning at this time." He paused for a moment as Watanabe levered his way downward, then a grin lit his face from ear to ear. "There'll be a slight delay before continuing the flight."

Minh sat on the grass at the edge of the runway, fifty feet from where a bucket brigade formed to draw water from the drainage ditch to toss on the still smoldering hulk. A hospital corpsman trotted up and began ministering to the cut high up on his forehead. He was still a little dazed in the excitement but apart from that he was fine.

"Better move back, Tojo," warned Bobby, taking Minh by his collar helping him to his feet and propelling him at a purposeful pace another hundred yards from the airplane.

"The fuel tank's leaking into that benjo ditch," he confided with great relish. "Just about now, there ought to be a bucket of AvGas landing on th ..."

He didn't finish the sentence because all at once, tentacles of flame snaked out of the blackened nacelle and raced up the wing. Before anyone had a chance to move, a livid fireball belched 50 feet into the air, its appearance accompanied by a leaden whump!

The fire spread quickly down the ditch where men were busy bailing buckets of fuel-contaminated water. The boiling flames paused slightly before racing back up the bank into the brigade line itself. Soon there were burning bodies whirling and leaping in a macabre frenzy. Some writhed on the ground in a vain attempt to smother the flames while others ran heedlessly back toward the camp, human torches touching off brush in

the open field. It was over in less than five minutes and while the hulk would continue to smolder for more than a day, the dead and wounded were policed up and borne to their appropriate resting places within the hour.

"You watch, Tojo," Bobby winked at Minh, his ever-present smile firmly in place. "They'll write this up as a bunch of suspected Vietcong killed or wounded in a firefight. MACV (Military Assistance Command Vietnam) will love it." Just for a moment a frown crossed Bobby's face. "Who knows, they might be right at that."

"More right than you think," Minh mused. "And a lot who weren't Cong before are now."

Bobby, Carl, Watanabe, and Minh were sitting in the mess tent each deep into his own thoughts, when the flap opened admitting a Special Forces captain who looked around uncertainly struggling to adapt to the light. Finally, he spied the group and made his way to their table.

"I guess you had a little excitement out there today, Mr. Minh," he said solicitously, preparing to sit. "Mind if I join you?"

"Not at all, Colonel," Minh lied glibly, watching the captain glow with pride as if the promotion were for real. "Yes, it was quite a ride. I'm terribly sorry about your men."

"It was a tragedy all right, but we caught the little bugger who started the fire. Before he died, he told us that most of the victims were Vietcong, so it could have been worse." Minh adopted his most somber and ah, the trials and tribulations of command expression for the occasion.

"Anyway, the reason I stopped in to see you was I hear you're on your way to Hoi An Ca." He looked at Minh for confirmation before continuing. "Look, I'll have my driver run you up there this afternoon, but maybe there's a favor you can do for me."

"Certainly, Colonel. I appreciate your kindness. How may I be of service?"

"We have a man up there - at least we used to - keeping an eye on things for us. Lic Son's his name. The trouble is that we haven't heard from him in over a week, and I'd like to find out what's happened to him. It's difficult for one of us to go in there and ask questions because we don't want to compromise him. If you could make discreet inquiries it would help us a lot, if you know what I mean."

"Ah yes, Colonel. I know exactly what you mean," he agreed with mock sincerity, chuckling inwardly at the thought that it was he who had set into motion the plan to have Lic Son serve as informer. "The Vietcong try to discourage cooperation with the Americans, even at a place as peaceful as Hoi An Ca. I will be happy to do as you ask and send word back with your driver. Now, may I ask an additional favor of you?"

"Anything."

"Could Watanabe here go along with me? I wish the world to see how well the pacification program is working here."

When it came time to leave, Bobby came over and gave him a big bear hug. "Sorry about the trip, Tojo," he said sincerely. "I sure hope you get over your headache soon."

"I'm fine, Bobby, and I thank you and Houdini for saving our lives." He started toward the jeep, then turned back. "If you're ever in the area and need a good meal and a little nooky, drop into the strip at Hoi An Ca. It's a nice village and we make a pretty mean rice wine."

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[Next week The Assault]